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ABSTRACT

The hue and cry of the business world is for an educational system that emphasizes the development of analytical abilities and problem solving skills. Society is looking for more competent females in the work force. This study examined the significance of gender, methodology, academic preparation, and age as related to development of judgmental and problem solving skills. Gender, mathematics American College Testing Program (ACT) scores, composite ACT scores, grades in coursework, and age were used to analyze the impact of teaching methodology on students' (N=118) ability to analyze financial statement data. The results reflected positively on the accounting student compared to the general college population and the female student in particular. Using different methods to teach activities did not appear to penalize students. Females in this study had higher grade point averages and higher post-case scores than did males. This may be an indication that accounting is attracting the more capable female student who possesses greater analytical ability. Although only 12 subjects were over 22 years of age, their grade point average was 3.08 as compared to 2.55 for the traditional age (18-22) student. The world of accounting and accounting education is in a state of flux. The complexity of college instruction often defies the advantages of controlled observations; nevertheless, there is a great deal to learn about the process through studies such as the one described in this classroom experience. (ABL)

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Gender, Teaching Methods and ACT Scores

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GENDER, TEACHING METHODS AND ACT SCORES

Summary. This study examines the significance of gender, methodology, academic preparation, and age as related to development of judgmental and problem solving skills. Sex, math ACT, composite ACT, grades in coursework, and age were used in analyzing the impact of teaching methodology on students' ability to analyze financial statement data. Results reflect positively on the accounting student compared to the general college population and the female student in particular.

The hue and cry of the business world is for an educational system that emphasizes the development of analytical abilities and problem solving skills (Treadway, 1987). The accounting profession is interested in a curriculum that provides knowledge, skills, and ethical values (AICPA, 1988). Society in general is looking for more competent females in the work force. A committee from the American Association of Colleges (1987) indicates that the gain in the number of women graduates is not reflected in the work place at rates comparable to male peers. Other studies reflect significant differences in the perceptions of men and women regarding the current acceptance of women in the public accounting profession (Turner, 1987; AICPA Special Committee, 1988).

College entrance tests designed to measure mathematics and other competencies continue to be a leading quantitative measure of academic ability. The Enhanced ACT assessment introduced in October, 1989, was a revised program designed to be more responsive to changes that have

occurred in high school curricula and more sensitive to current expectations about the skills and knowledge students need for success in college (ACTivity, 1988).

In recent years the measurement community has given increasing attention to gender based differences, particularly in mathematical ability (Doolittle & Cleary, 1987). The majority of studies show no sex differences in the preadolescent stages, but differences after that tend to indicate boys outperform girls (Maccoby & Jacklin, 1974). A more recent study by Doran and Livingston (1987) accedes that the questions concerning male-female differences in intellectual abilities are controversial, but "one fairly well-established research finding is that, on the average, males tend to out perform females on tests of mathematical ability (p. 65)." Reports concerned with the educational level of both males and females continue to show that the final educational attainment of women typically falls behind that of men (Janman, 1987).

Instruction in higher education has struggled through a variety of changes in technique--lectures, discussion, seminars, and independent study. In this age of exposure to a myriad of communication techniques, an instructor is less likely to maintain one and only one instructional method during the life span of a teaching career (McCord, 1985). Since its installation in Harvard Law School in 1869 (Gue, 1977) the case study method of instruction has gained popularity among educators in a variety of disciplines. Its advantages, particularly as a means of bridging theory and practice,

have been reported by teachers of diverse disciplines such as medicine (Morgan, 1977), management (Martin, 1977; Ahmadian, 1988), communication skills (McAdoo & Nelson, 1975), the sciences (Jones, 1986) and of course, law (Shreve, 1977; Subotnik, 1988).

Is the use of real world experiences (case study) in the academic setting a viable means of developing judgment skills for both female and male students? Using ACT math and composite scores as a measuring stick, how do today's female accounting students compare with male counterparts? Do accounting students (female and male) differ from the general population on ACT scores? Do students different in gender also differ in ability to analyze real world financial data? Does age (maturity) show differences in academic ability?

METHOD

Subjects. Subjects were from four sections of Principles of Accounting II (second semester) at a state regional university. Professor B taught two sections and Professor P taught two sections. An objective test designed to measure basic accounting knowledge (first semester principles) was administered to the four sections at the beginning of the Spring semester, January, 1988. A second test (post-corp.) designed to measure knowledge of corporate accounting was administered to the four sections one month later in February, 1988. Basic accounting knowledge is defined as an understanding of Chapters 1-13, (Meigs and Meigs, 1987); corporate accounting knowledge is defined as Chapters 14-19. These two test scores along with grade point average (GPA) and ACT scores were used to determine if the

classes were significantly ($p < .05$) different. Professor B designated one of her sections as the control (Control-B) and the other as the experimental (Experimental-B) section. Professor P did the same (Control-P and Experimental-P).

Instruments. Control sections were assigned the end of the chapter problems for homework (Chapter 20, Meigs, Financial Statement Analysis). Experimental sections were assigned a case study as homework. The case study was designed to develop analytical ability using financial statement analysis of a publicly-held corporation (Powers & Needles, 1986). In-class discussion of financial statement analysis techniques did not differ for either the control or experimental sections. The identifying difference was the use of the end-of-chapter problems vs. the case study as homework assignment. Each professor made a conscientious effort to assure identical teaching environments in their control and experimental sections.

Post-testing consisted of the administration of an objective test designed to measure the ability to analyze financial statements from a managerial perspective, i.e., debt, leverage, liquidity, solvency. Results of the financial statement post-test were analyzed to determine if varied teaching methods had a significant ($p < .05$) effect on students' ability to analyze financial statement data.

Analysis. Group, math ACT, composite ACT, sex, grade in first-semester principles, and age were used as independent variables.

RESULTS

Chi-square analysis of pretest scores yielded no significant differences between the four accounting classes, Control-B, Experimental-B, Control-P, and Experimental-P. Analysis of post-corp. and post-case scores indicated the four class scores were not significantly different.

Pearson's R analysis yielded a significant relationship between pretest, post-corp. and post-case scores and ACT composite scores, ACT math scores and cumulative GPA (Table 1).

Analysis of variance of post-case scores by sex of students showed a significant difference, $F(1, 118) = 4.13085$, $p < .044$. These results are in Table 2.

ACT composite scores and ACT math scores were not significantly different for females and males. Cumulative GPA of females and males was significantly different, $F(1, 96) = 5.957$, $p < .017$. These results are in Table 3.

Analysis of grade in first semester accounting principles between females and males approached significance, $F(1, 95) = 3.741$, $p < .056$ as did the analysis using age, $F(1,95) = 3.797$, $p < .054$.

DISCUSSION

Using different methods to teach accounting does not appear to penalize students. Perhaps individual professors can feel more freedom to vary their teaching methods if this does not adversely affect students' learning as measured by teacher constructed tests.

Accounting majors may differ from the usual college students in ACT math or composite scores. Research has shown the males have higher ACT math scores than females (ACT, 1987). In this sample of 118 accounting students there was not a significant difference in ACT math scores. University, state, and national average ACT math and composite scores for females and males are shown in Table 4. Females in this study had higher GPA's and higher post-case scores than the males. This may be an indication that accounting is attracting the more capable female student--those with greater analytical ability. Accounting appears to be gradually losing the image of a traditional male career at the entry level. The AICPA annual supply and demand surveys of accounting graduates reveal the increasing representation of women in the accounting profession. In 1977, 28% of accounting graduates were female; today, women comprise 50% of accounting graduates.

Although only twelve (12) subjects were over 22 years of age, their GPA was 3.08 as compared to a GPA of 2.55 for the traditional age (18-22) student. If GPA is a fair indication of academic ability, the returning or non-traditional student can be encouraged by the results of this study.

"...education really is complicated," that reason was given years ago to explain the lack of theorists and researchers in education (McKeachie & Kulik, 1975, p. 199). The statement is still valid today. The world of accounting and accounting education is in a state of flux. The complexity of college instruction often defies the

advantages of controlled observations; nevertheless, there is a great deal to learn about the process through studies such as the one described in this classroom experience.

References

American Association of Colleges. (1987). Looking for more than a few good women in traditionally male fields. Project Report on the Status and Education of Women of the Association of American Colleges.

American College Testing Program. (February, 1987). ACT ISSUEgram, No. 8.

American College Testing Program. (October, 1988). ACTIVITY, Vol. 26, No. 3.

American Institute of Certified Public Accountants. (1988). Education Requirements For Entry Into The Profession.

American Institute of Certified Public Accountants. (1988). The Supply of Accounting Graduates and the Demand for Public Accounting Recruits.

American Institute of Certified Public Accountants Special Committee. (1988). Upward Mobility of Women, Report to the AICPA Board of Directors.

Ahmadian, A. (January, 1986). Case analysis and extensive classroom discussion--An alternative in teaching management courses. Journal of Education for Business.

Doolittle, A. and Cleary, T. (Summer, 1987). Gender based differential item performance in mathematics achievement items. Journal of Education Measurement, Vol. 24.

Doran, N. and Livingston, S. (Spring, 1987). Male-female differences in SAT-Verbal ability among students of high SAT-Mathematical ability, Journal of Education Measurement, Vol. 24, p. 65.

Gue, I.R. (1977). An Introduction to Education Administration in Canada, McGraw-Hill Ryerson, Ltd., Toronto.

Janman, K. (1987). A-Level expectancies and university aspirations of males and females, Vol. 57.

Jones, R.F. (1975). The Case Study Method. Journal of Chemical Education, Vol. 52.

Macoby, E. and Jacklin C. (1974). The Psychology of Sex Differences. Stanford University Press.

Martin, T.B. (1976). The case problem in professional business education. Journal of Business Education, Vol. 52.

McAdoo, J. and Nelson, P. (1975). Teaching speech communication via the case method. Today's Speech, Vol. 23.

McCord, Michael. (1985). Methods and theory of instruction. Higher Education Handbook of Theory and Research, Vol. 1, Smartt (Ed.), Agathon Press.

McKeachie, W. and Julik, J. (1975). Effective college teaching. Review of Research in Education, Peacock, p. 199.

Meigs, W.B.. & Meigs, R.F., (1987). Accounting: The Basis for Business Decisions, 7th Ed., McGraw Hill, New York.

Morgan, H.R. (1977). A problem oriented independent study program in basic medical sciences. Medical Education, Vol. 6.

Powers, M., & Needles, B. (1987). A practice case in financial analysis. General Mills Incorporated, Houghton Mifflin Co.

Shreve, G.R. (1977). Classroom litigation in the first semester of law school--An approach to teaching legal method at Harvard. Journal of Legal Education, Vol. 29.

Subotnik, C. (Fall, 1987). What accounting can learn from legal education. Issues in Accounting Education, Vol. 2.

Treadway, J., Jr., Chairman. (October, 1987). Report of the National Commission on Fraudulent Financial Reporting.

Turner, H., Hermanson, R., and Trapp, M. (1987). Current Perceptions of Issues Related to Women in Accounting. Georgia Institute of Technology.

TABLE 1

Pearson Correlation Coefficients

	Pre-Test	Post-Corp	Post-Case
ACT COMP	.4624	.4136	.2110
	(90)	(94)	(96)
	p= .000	p= .000	p= .020
ACT MATH	.3997	.4390	.2829
	(90)	(94)	(96)
	p= .000	p= .000	p= .003
CUM GPA	.2258	.5710	.5063
	(110)	(116)	(118)
	p= .009	p= .000	p= .000

TABLE 2

Post-Case Scores

	M	N	F	Significance
Male	69.03636	55		
Female	73.93651	63	4.13085	.044

TABLE 3

Cumulative GPA

	M	N	F	Significance
Males	2.51	44		
Females	2.79	52	5.957	.017

TABLE 4

ACT Scores

Subjects		Female	Male	Average
	Math	18.73	19.14	18.92
	Composite	19.73	19.98	19.84
1987-88				
University	Math	14.1	15.9	14.9
University	Composite	18.3	17.3	17.7
State	Math	14.7	17.2	15.8
State	Composite	17.4	18.9	18.0
National	Math	16.1	18.6	17.2
National	Composite	18.1	19.5	18.7
1986-87				
University	Math	14.0	15.7	14.8
University	Composite	17.1	17.9	17.4
State	Math	14.5	17.3	15.7
State	Composite	17.2	18.9	18.0
National	Math	16.0	18.8	17.3
National	Composite	18.1	19.6	18.8
1985-86				
University	Math	14.2	15.4	14.7
University	Composite	16.7	17.3	17.0
State	Math	14.4	16.9	15.6
State	Composite	16.9	18.5	17.6
National	Math	16.0	18.6	17.2
National	Composite	17.9	19.4	18.6

Data compiled from ACT Class Profile Report, 1987